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COUPLING FOR SQUEEZE BOTTLES

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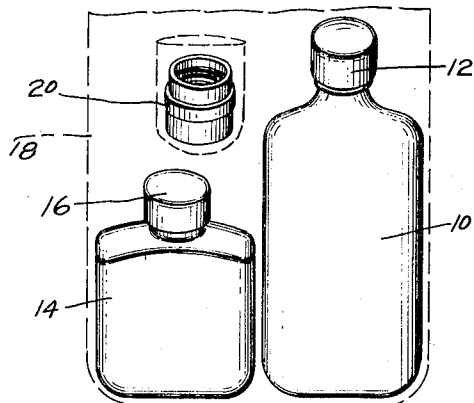


Fig. 1.

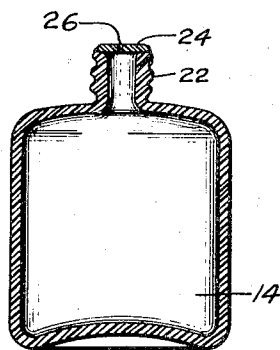


Fig. 2.

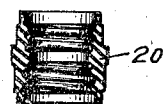


Fig. 3.

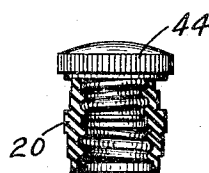


Fig. 7.

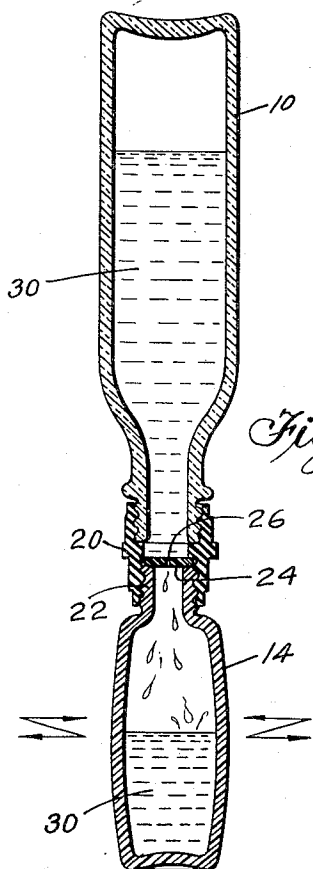


Fig. 4.

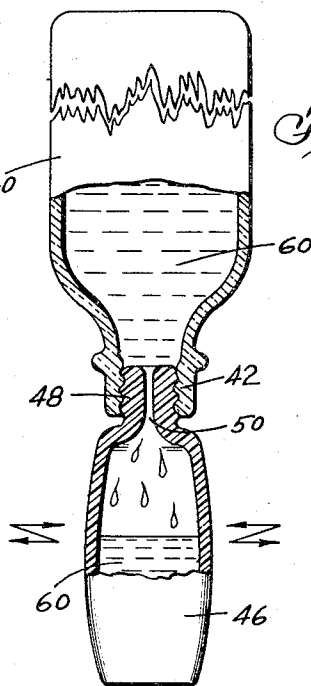


Fig. 5.



Fig. 6.

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COUPLING FOR SQUEEZE BOTTLES

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6 Claims. (Cl. 141—5)

This invention relates to an improved coupling for squeeze bottles, and has for one of its principal objects the provision of a simple, efficient and easily operated device for re-filling a squeeze-type dispenser container of liquids by the consumer for re-use.

One of the important objects of this invention is to provide means whereby a relatively large size stock container of various liquids, can be used to refill smaller containers, particularly those of the type known as squeeze bottles. The liquids employed can be of many types, but the invention is directed more especially to those in the cosmetic and drug line, such as shaving lotions, perfumes, rubbing alcohol, liniments and the like.

Another important object of the invention is to provide a leak-proof coupling wherein the stock liquid container can be readily joined to the squeeze-type dispensing container for refilling purposes.

Yet another object of the invention relates to the particular type of coupling which is interiorly threaded so as to be readily fitted to the two containers or bottles, or wherein a stock liquid container with female threads can be used with the squeeze bottle, thereby eliminating the necessity of a coupling.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawing and following specification.

The invention, in a preferred form, is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a perspective view of a package which includes a relatively large size stock bottle or container for a particular liquid, lotion or the like, and a relatively smaller sized bottle of a collapsible or plastic material, and the coupling for joining the two bottles or containers for refilling the smaller one.

Figure 2 is a slightly enlarged sectional view of the squeeze-type bottle, and illustrates the same with the improved attachment of this invention thereon.

Figure 3 is a sectional view of the specially designed coupling, which is for the purpose of the refilling operation and connects the containers.

Figure 4 is a sectional view showing the larger stock liquid container connected by the coupling to the smaller squeeze-type container and illustrating the process of refilling.

Figure 5 is a view somewhat similar to Figure 4, but illustrating a slightly modified form of the invention.

Figure 6 is a side elevation of a special type of closure or stopper adapted for use with the stock container of Figure 5.

Figure 7 illustrates an adaptation.

As shown in the drawings:

The reference numeral 10 indicates generally a stock container for the purpose of holding a liquid such as a shaving lotion, perfume or the like. Such containers ordinarily comprise the most economical manner of marketing the contents because the customer purchases in larger

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quantities, and the item of cost is important so far as the containers themselves are concerned.

However, it often happens that it is impractical for consumers and users to handle large size stock bottles or containers. This relates particularly to travelers, and especially those using airplanes, where luggage space is limited and at a premium.

Furthermore, with the advent of plastic collapsible bottles as distinguished from those made of glass, such plastic types have increased greatly in demand, and here again, the problem of providing a squeeze-type bottle of a relatively small size, and at a relatively small cost to the ultimate consumer, is important.

The receptacle 10 can therefore be of larger size and of glass or even of metal, and can be provided with the usual closure element, cap or stopper 12.

The smaller refillable plastic squeeze-type container adapted to be used in accordance with the principles of this invention is illustrated at 14, this also being fitted with a removable cap or closure 16.

For distribution purposes, the two containers 10 and 14 may be packaged as a single unit in a container 18, which may be of some transparent material, and in the same container, there is provided the coupling 20 whereby the two receptacles can be connected for a ready transfer of liquid or the like from the larger stock bottle of rigid material to the smaller and lighter bottle or container 14 of resilient or plastic material.

This smaller and more readily transferable container 14 is illustrated in more detail in Figure 2, and is provided with a restricted exteriorly screw-threaded neck 22 whereby the closure 16 can be readily applied and as readily removed.

The neck 22 can be provided with a relatively wide outlet, but as the liquids contained in these receptacles are ordinarily used in relatively small quantities, a dispensing gasket 24 is affixed at the outlet of the neck 22 and preferably sealed in position. This gasket or disc 24 is provided with a small central opening 26 for liquid dispensing purposes, and this perforated disc assists in the liquid transferring operation.

For such a liquid transferring operation, the coupling 20, which may be of any suitable material, such as rubber, plastic or metal, is employed to connect the stock bottle 10 to the dispensing or squeeze bottle 14, as best shown in Figure 4.

Assuming that the dispensing or squeeze bottle 14 is empty or nearly so, the connected containers are then held in the position shown in Figure 4, and the collapsible container 14 is compressed inwardly as shown by the zig-zag arrows in the figure, expelling some of its contained air by compression through the opening 26 in the disc or gasket 24, which air will then rise to the top of the stock bottle or container 10. Upon release of pressure on the collapsible or plastic container 14, also as indicated by the zig-zag arrows, droplets of the liquid 30 will be expelled from the upper container through the opening 26 into the lower container, and this will be expedited by reason of the fact that air under compression is in the bottle 10 and a slight vacuum will preliminarily exist in the bottle 14. The liquid 30 will then be transferred in a desired quantity to the smaller container, as indicated in the figure, whereupon the smaller container can be employed for subsequent dispensing operations, and at the same time providing a more readily manipulated package and one which is not subject to breakage or will not be bulky in handling or transportation.

In Figures 5 and 6, a slightly modified form of the invention is illustrated, wherein a stock bottle 40 is provided, of usual size and shape, but with its neck 42 interiorly screw-threaded for the normal reception of a

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correspondingly screw-threaded closure or stopper 44. Such a stopper is illustrated in Figure 6.

The squeeze bottle 46 is of smaller size than the stock bottle 40, and is provided with a restricted exteriorly screw-threaded neck 48 which is of such dimensions and proportions that it can be readily fitted into the interiorly screw-threaded neck 42 of the stock bottle 40.

Instead of the perforated disc or gasket 24 of the bottle 14, a more restricted passage or opening 50 is provided in the neck 48 of the squeeze bottle 46, whereby only a relatively small quantity of the liquid 60 can be dispensed, and this restricted opening 50 facilitates the transfer of the liquid 60 from one container to the other by reason of the alternate compressing and releasing operation previously described.

It will be evident that herein is disclosed the concept of a close system of liquid transfer through a very small opening by simple control of pressure changes within the system. Pressure increases inside the entire system and consequent expulsion of air from the squeeze-type dispensing container are effected by manual compression of the plastic resilient smaller container. Pressure decreases and returns to approximate atmospheric pressure inside the system, and resultant liquid transfer from the larger stock liquid container to the smaller plastic dispensing container are effected by release of pressure on the resilient container, and this is especially true when the system is held in such a position so that the stock liquid container is inverted.

The fundamental principles described in the above manner of liquid transfer can be extended to a system utilizing a stock liquid container with female threads replacing the standard exteriorly threaded container, and such will eliminate the necessity of the coupling, provided of course that the neck of the flexible dispensing container is exteriorly screw-threaded so as to accommodate itself and snugly fit into the interiorly screw-threaded neck of the stock container.

As shown in Figure 7, the cap 12 of the larger bottle 10 can be dispensed with, and the coupling 20, together with the stopper 44 used as a permanent closure element for the stock bottle 10. In that event, the coupling 20, as shown in Figure 1, can be omitted from the kit.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

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I claim as my invention:

1. A coupling for stock containers and squeeze bottles whereby the latter may be refilled from the stock container, said coupling comprising a unitary tubular element interiorly and reversely screw-threaded at its ends to accommodate the correspondingly exteriorly screw-threaded necks of the respective stock and squeeze bottles, the outer end of the squeeze bottle neck having a restricted opening, said restricted opening comprising perforated disc mounted on the outer end of the squeeze bottle neck, said disc mounting comprising a liquid and airtight sealing relationship and an exteriorly screw threaded closure element for the stock bottle.

2. A method of transferring liquids from a stock bottle to a squeeze-type dispensing container, comprising connecting the bottles by a coupling, compressing the squeeze bottle to provide a pressure within the connected system and expel air from the squeeze bottle into the stock container, and thence releasing pressure on the squeeze bottle, whereby liquid is transferred from the stock bottle to the squeeze bottle by reason of a higher than atmospheric pressure in the stock bottle, and a lower than atmospheric pressure in the squeeze bottle.

3. A method as described in claim 2, wherein the coupling comprises a third element of tubular shape interiorly screw-threaded at each end to receive the necks of the stock and dispensing containers.

4. A method as described in claim 2, wherein the coupling comprises an interiorly screw-threaded neck for the stock bottle, and an exteriorly screw-threaded neck for the squeeze bottle.

5. A method as described in claim 4, wherein a restricted passageway is provided in the squeeze bottle neck.

6. A method as described in claim 4, wherein a disc having a restricted perforation therein is mounted on the outer end of the neck of the squeeze bottle.

References Cited in the file of this patent

UNITED STATES PATENTS

463,215	Rodiger	Nov. 17, 1891
687,253	Morgan	Nov. 26, 1901
747,153	Dunn	Dec. 15, 1903
820,987	Perotti	May 22, 1906
1,241,352	Doering et al.	Sept. 25, 1917
1,728,964	Hein	Sept. 24, 1929
1,853,028	Aronson	Apr. 12, 1932
1,876,452	Gusdorf	Sept. 6, 1932
2,122,757	Scott	July 5, 1938